OPERATING MANUAL
METO-FER® AUTOMATION AG

ROTARY ACTUATOR TYPE	MD 12/90B
SERIES FROM 3-22	

1. PRODUCT DESCRIPTION

1.1 Introduction

1.1.1. Utilization

The rotary actuator MD 12/90B is able to execute rotary movements in any position. The rotary movement can be adjusted in its working area.

1.1.2. Safety Precautions

Before starting to operate the rotary actuator MD 12/90 B, it is necessary to check that no body parts are within the working range of the element. In such a case the unit must not be operated.

The maximum supply pressure of 8 bar must not be surpassed.

1.1.3. Danger Area

Any body parts are to be kept out of the working area (rotary area) of the unit in order to avoid mangling.

1.2 Technical Data

1.2.1 Weights and Measurements

See also Sheet 6

Type	Angle of Rotation	Air Consumption*	Weight Lb.(kg)
MD 12/90 B	0 - 90°	0.02 NL	0.77(0.35)

NL: Normal Liter

*for each double stroke at 72.5 PSI (5 bar)

1.2.2. Performance Characteristics

Max load radial to shaft 34.0 Lb. (150N)

Max load axial to shaft 54.0 Lb. (240N)

Repeatability +/- 320 ARC SEC

Torque at 72.5 PSI (5 bar) 3.36 Lb. In. (0.38NM)

1.2.3 Operating Source

40mm filtered, unoiled or oiled air (dew point 6°C)

Operating pressure P_{min} 3 bar

P_{max} 8 bar

1.2.4 Connections

Air connections M-5 (See sheet 6)

1.2.5 Environment

Temperature	50°F to 122°F (+ 10°C to + 50°C)
Relative humidity	95% (without condensation of water)
Purity of the environment air	regular working place atmosphere

1.3 Features

1.3.1 Standard Features (included in delivery)

The unit delivered will have two patented end screws type AS 08/40 with fine thread. These end screws adjust the angle of rotation within its working area.

1.3.2 Special Equipment

The end screws can be fitted with the patented sensing elements (see Meto-Fer® Electronic catalog, pages 22 and 23) in order to check the end position.

2. SAFETY REGULATIONS

2.1 In general

See chapters 1.1.1
1.1.2
1.1.3

2.2 Specifically

Do not make any changes or modifications to the unit (voids warranty).

3. CONSTRUCTION AND FUNCTION

The angle of rotation can be made infinitely variable with the end screws AS 08/40 (Pos.101). Please note by needed rotation from 0^{o} to 60^{o}, put stop screw in Pos.B-B. Rotation from 60^{o} to 90^{o}, put stop screws in Pos. A-A (see Sheet 6).

4. INITIAL OPERATION

4.1 Compressed Air

Remove the safety caps from the air connections. In order to regulate the velocity of the movement, we recommend our flow controls DV-M5 (see sheet 5.021). Unused air connections must be covered with the M-5 caps.

4.2 Adjustment of Angle

- loosen security nut on the stop screw
- adjust the required angle with the stop screw (Pos.101)
- tighten security nut on the end screw

5. MAINTENANCE

5.1 Introduction

The rotary unit does not require any special maintenance procedure. Never use any type of solvents in order to clean the unit.

5.2 Air Supply

The rotary actuator is equipped with **oil-free seals** and can be operated with dry and non-oiled compressed air. If oiled compressed air is used, we recommend:

- Airpress compound SAE 5 (Klueber Order No. 063027)

6. REPAIR

6.1 Introduction

If the unit does no longer fulfill the desired requirements (leakage, wear, etc.) the defective parts must be replaced.

6.2 Safety Precautions

Before dismounting the unit, it is necessary to check that the compressed air supply is turned off. It is best to disconnect the compressed air supply from the unit.

When repair work is done, only the original spare parts and lubrication must be used.

6.3 Replacing the Seals

- Remove the slotted Ring Nut (Pos.3)
- Remove the Stop Plate (Pos.8)
- Remove the Safety Ring (Pos.203)
- Press out the Shaft (Pos.7)
- Remove the Safety Ring (Pos.203) and the Top (Pos.6)
- Extract the Piston (Pos.4)
- Replace the Seals
- Grease the Cylinder Bore, Rack Pinion and Shaft (See Chapter 7.2)
- With help at a distance block make sure that the Rack Pinion/Piston is the middle of the Cylinder.
- The parts are now assembled in reverse order, as above described.

6.4 Replace the Ball Bearings

- Remove the slotted Ring Nut, Stop Plate and Shaft as in Chapter 6.3.
- Press out the Bearing (Pos.208)
- Extract the Bearing (Pos.209)
- Grease and assembly in reversed order, as described above.

7. SPARE PARTS LIST

7.1 Spare Parts

When ordering spare parts, the type and serial number of the unit must be stated.

Position	Part Number	Description	Quantity
208	045.120.0012	Ball Bearing	1 Pc.
209	045.120.0021	Ball Bearing	1 Pc.
*210	025.150.0500	Piston Seals	2 Pc.
*212	025.100.0330	O-Rings	2 Pc.

Seal Kit Part No. **460.100.0105** all items marked with (*)
Repair Kit Part No. **460.110.0142** kit includes Pos. 208 and 209

7.2 Lubrication

Grease for seals	Staburag NBU 4 Atemp. (Klueber Order No. 005 040)
Grease for ball bearings	Staburag NBU 4 Atemp. (Klueber Order No. 005 040)